Amendments to the Claims:

This listing of the claims will replace all prior versions, and listings, of claims in the application.

1. (currently amended) A method for transposing data in a plurality of processing elements arranged in an NxN array, where N is greater than three, comprising;

shifting the data N-1 times along a plurality of diagonals of the plurality of processing elements until each processing element in each of said plurality of diagonals has received the data held by every other processing element in that diagonal; and

selecting data as final output data based on a processing element's position.

2. (original) The method of claim 1 additionally comprising one of loading an initial count into each processing element and calculating an initial count locally based on the processing element's location, said selecting being responsive to said initial count.

3. (currently amended) The method of claim 2 wherein ~~said plurality of processing elements is arranged in an array and~~ said initial count is given by one of the following expressions:

(x + y +1) MOD (~~array size~~ N)

(C + R + 1) MOD (~~array size~~ N)

(C + y + 1) MOD (~~array size~~ N) or

(x + R +1) MOD (~~array size~~ N)

where ~~y and R~~ R and x are numbers indicating a row and a position in the row of a processing element and C and [[x]] y are numbers indicating a column and a position in the column of a processing element, respectively.

4. (original) The method of claim 2 additionally comprising maintaining a current count in each processing element, said current count being responsive to said initial count and the number of data shifts performed, said selecting being responsive to said current count.

5. (original) The method of claim 4 wherein said maintaining a current count includes altering said initial count at programmable intervals by a programmable amount.

6. (original) The method of claim 4 wherein said initial count is decremented in response to said shifting of data to produce said current count.

7. (original) The method of claim 4 wherein said selecting occurs when said current count is non-positive.

8. (original) The method of claim 1 additionally comprising maintaining a local count including setting a counter to a first known value, and counting up from said first known value based on the number of shifts that have been performed, said selecting occurring when a current count equals a target count.

9. (original) The method of claim 1 wherein said shifting includes a combination of vertical and horizontal shifting.

10. (original) The method of claim 1 wherein said shifting includes a combination of shifting in the x and z directions.

11. (currently amended) A method for transposing data in an array of processing elements, comprising:

shifting the data along ~~each diagonal~~ a plurality of diagonals in the array a number of times equal to N-1 where N equals the size of an edge of the array and is greater than three; and

outputting data from each processing element as a function of that element's position in a diagonal.

12. (original) The method of claim 11 additionally comprising one of loading an initial count into each processing element and calculating an initial count locally based on the processing element's position in a diagonal, said outputting being responsive to said initial count.

13. (currently amended) The method of claim 12 wherein said initial count is given by one of the following expressions:

(x + y +1) MOD (~~array size~~ N)

(C + R + 1) MOD (~~array size~~ N)

(C + y + 1) MOD (~~array size~~ N) or

(x + R +1) MOD (~~array size~~ N)

where ~~y and R~~ R and x are numbers indicating a row and a position in the row of a processing element and C and [[x]] y are numbers indicating a column and a position in the column of a processing element, respectively.

14. (original) The method of claim 12 additionally comprising maintaining a current count in each processing element, said current count being responsive to said initial count and the number of data shifts performed, said outputting being responsive to said current count.

15. (original) The method of claim 14 wherein said maintaining a current count includes altering said initial count at programmable intervals by a programmable amount.

16. (original) The method of claim 14 wherein said initial count is decremented in response to said shifting of data to produce said current count.

17. (original) The method of claim 16 wherein said outputting occurs when said current count is non-positive.

18. (original) The method of claim 12 additionally comprising maintaining a local count including setting a counter to a first known value, and counting up from said first known value based on the number of shifts that have been performed, said outputting occurring when a current count equals a target count.

19. (original) The method of claim 11 wherein said shifting includes a combination of vertical and horizontal shifting.

20. (original) The method of claim 11 wherein said shifting includes a combination of shifting in perpendicular directions.

21. – 25. Cancelled.

26. (currently amended) A computer readable memory device carrying an ordered set of instructions which, when executed, perform a method comprising:

shifting ~~the~~ data N-1 times along a plurality of diagonals of ~~the~~ a plurality of processing elements in an NxN array where N is greater than three until each processing element in each of said plurality of diagonals has received the data held by every other processing element in that diagonal; and

selecting data as final output data based on a processing element's position.